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Research Paper Management

Comparison between MACD with EMA and Stochastic Oscillator

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ABSTRACT

The moving average convergence divergence (MACD) is one of the most well known and used indicators in technical analysis. This indicator is comprised of two moving averages, which help to measure momentum in the security. The paper studies that by using MACD and Stochastic Oscillator we can compare that which method is better than another on various criterion. This paper studies that which of technical analysis generates best profit, maximum no of buying and selling signals, best Average return.

KEYWORDS : MACD (Moving Average Convergence Divergence), EMA (Exponential Moving Average), 1st buying signal predicted then next selling signal predicted (1B, 1S), 26 D (26 days), 12 D (12 days), 12SC (12 smoothing Constant), 26SC (26 Smoothing Constant), %K = (Current Close - Lowest Low)/(Highest High - Lowest Low) * 100, %D = 3-day SMA of %K

INTRODUCTION:

The MACD (Moving Average Convergence/Divergence) is in category of trend indicators which shows relationship between prices and moving averages. The MACD was introduced by Gerald Appel, in 1970s. It is the different between moving averages for 26 and 12 days. MACD as a momentum indicator can predict the moves in the underlying security. MACD divergences are basic elements in forecasting a trend alters. A Negative Divergence signal which bullish momentum is waning and a change in trend from bullish to bearish is possible, too. It warns the traders to take benefits in long positions or for violent traders setting off a short position. Another advantage of MACD is its application in daily, weekly or monthly charts. In this regard, the divergence and convergence of two moving averages will be shown by the MACD. Although, the standard setting defined for the MACD is the difference between the 12 and 26-period EMA, any combination of moving averages can be applied. In addition, the set of moving averages to be applied in MACD can be changed for each individual security. For example, a faster set of moving averages may be suitable for weekly charts. On the other hand, slower moving averages may appropriate to help smooth the data for volatile stocks. Regarding this flexibility, the MACD can be adjusted to the trading style, risk tolerance and objectives of the traders.

Developed by George C. Lane in the late 1950s, the Stochastic Oscillator is a momentum indicator that shows the location of the close relative to the high-low range over a set number of periods. According to an interview with Lane, the Stochastic Oscillator "doesn't follow price, it doesn't follow volume or anything like that. It follows the speed or the momentum of price. As a rule, the momentum changes direction before price." As such, bullish and bearish divergences in the Stochastic Oscillator can be used to foreshadow reversals. This was the first, and most important, signal that Lane identified. Lane also used this oscillator to identify bull and bear set-ups to anticipate a future reversal. Because the Stochastic Oscillator is range bound, is also useful for identifying overbought and oversold levels.

Now, the study using two kinds of technical tool namely MACD and Stochastic Oscillator. In the study we are going to use 26 days, 12 days EMA based MACD predictions on 3 top banking companies based on Market cap on 21 November 2013 and for the same time duration I study Stochastic Oscillator predictions are also found. After getting signals for the betterment of the study in the research (Average B, 1S) rule was applied which means that after getting the chart I choose more than one buying signal and I average that buy and after I get selling signals. No short sell is allowed.

REVIEW OF LITERATURE:

Z. K. Silagadze (2011) In these research paper using the Moving Mini-Max – a new indicator for technical analysis tools for knowing the market movement of share price. To identify lines of resistance and support, traders usually use some moving average indicator. If the price goes through the local maximum and crosses a moving average, we have a resistance line indicating the price at which a majority of traders expect that prices will move lower. A support line happens when the price crosses a moving average after the local minimum. The support line indicates the price at which a majority of traders feel that prices will move higher. The problem is fluctuations of the price which hampers the identification of both the local extremism and the corresponding crossing points with the moving average.

Wing-Keung Wong, National University of Singapore And Meher Manzur, Curtin University of Technology. Singapore Straits Times Industrial Index (STII) data is used to investigate whether the technical indicators do play any useful role in the timing of stock market entry and exit. More specifically, appropriate test statistics are introduced to test whether the buy and sell signals yield significantly positive return and a test for the difference in returns given by both buy signals and sell signals. The focus is on the most established of the trend followers, the Moving Average (MA), and the most frequently used counter-trend indicator, the Relative Strength Index (RSI), MACD and Stochastic.

Neftci (1991), showed that a few of the rules used in technical analysis generate well-defined techniques of forecasting, but even well-defined rules were shown to be useless in prediction if the economic time series is Gaussian. However, if the processes under consideration are non-linear, then the rules might capture some information. Tests showed that this may indeed be the case for the moving average rule.

STATEMENT OF THE PROBLEM

MACD and Stochastic Oscillator is best tool to predict security price movement in technical analysis. The paper studies that by using these different methods of technical analysis, how well 1 method provides prediction compare to other method.

This paper also studies that method of technical analysis generates best profit, maximum no of buying and selling signals, best Average return.

NEED FOR THE STUDY

There are several methods are available in technical analysis to predict price movement of the different securities. But from that I choose two tools for comparing the method which gives highest signal, best profit and highest average return.

OBJECTIVE OF THE STUDY:

Main Objective:

To **Predict** direction of security price through study of past data of security.

Secondary Objective:

To improve the Technical Analyst knowledge of **indicators such as MACD and Stochastic Oscillator.**

- To generate a signal (Buy and Sell) indication of company and return given by company in a two year.
- To know which company is strong company, which give highest return in two year?

METHODOLOGY OF THE STUDY:
Sampling Design:
Sample:

- Daily closing price of three leading bank based on Market Cap. On 21 November 2013 of last two years.
- Daily closing price of SBIN from the date 01-10-2011 to 30-09-2013
- Daily closing Price of HDFCBANK from the date 01-10-2011 to 30-09-2013
- Daily closing Price of ICICIBANK from the date 01-10-2011 to 30-09-2013

Sample size:
2 years data of SBI, HDFC bank and ICICI bank on Daily basis.

Sampling Method: Non-Probability Judgmental.

Nature and Sources of Data: The Present study is of analytical nature and secondary data are used. The data is taken from the website www.nseindia.com.

LIMITITION OF STUDY:

- Technical analysis is based on individual perspective the prediction of all individual for investment is different so one cannot rely on others prediction.
- Technical analysis is based on the prediction so, it is individual investor choice to take the risk for investment by using this tool or not.
- The technical analysis is based on present price data of shares so it predicts the future investment time not provide accurate time for investment.
- To prove the study I take more than one Buy, means we can average the buy whenever it is allowed by methods but we cannot take more than one sell.
- The short sell is not allowed and transaction cost is ignored.

TOOLS AND TECHNIQUES OF DATA ANALYSIS:
Moving Average Convergence Divergence (MACD)
The moving average convergence divergence (MACD) is one of the most well known and used indicators in technical analysis. This indicator is comprised of two exponential moving averages, which help to measure momentum in the security. The MACD is simply the difference between these two moving averages plotted against a centerline. The centerline is the point at which the two moving averages are equal. Along with the MACD and the centerline, an exponential moving average of the MACD itself is plotted on the chart. The idea behind this momentum indicator is to measure short-term momentum compared to longer term momentum to help signal the current direction of momentum.

MACD= shorter term moving average - longer term moving average

When the MACD is positive, it signals that the shorter term moving average is above the longer term moving average and suggests upward momentum. The opposite holds true when the MACD is negative - this signals that the shorter term is below the longer and suggest downward momentum. When the MACD line crosses over the centerline, it signals a crossing in the moving averages. The most common moving average values used in the calculation are the 26-day and 12-day exponential moving averages. The signal line is commonly created by using a nine-day exponential moving average of the MACD values. These values can be adjusted to meet the needs of the technician and the security. For more volatile securities, shorter term averages are used while less volatile securities should have longer averages. Another aspect to the MACD indicator that is often found on charts is the MACD histogram. The histogram is plotted on the centerline and represented by bars. Each bar is the difference between the MACD and the signal line or, in most cases, the nine-day exponential moving average. The higher the bars are in either direction, the more momentum behind the direction in which the bars point.

As you can see in Figure , one of the most common buy signals is generated when the MACD crosses above the signal line (blue dotted line), while sell signals often occur when the MACD crosses below the signal.



Exponential Moving Average Calculation
Exponential moving averages reduce the lag by applying more weight to recent prices. The weighting applied to the most recent price depends on the number of periods in the moving average. There are three steps to calculating an exponential moving average. First, calculate the simple moving average. An exponential moving average (EMA) has to start somewhere so a simple moving average is used as the previous period's EMA in the first calculation. Second, calculate the weighting multiplier. Third, calculate the exponential moving average. The formula below is for a 10-day EMA.

SMA: 10 period sum / 10

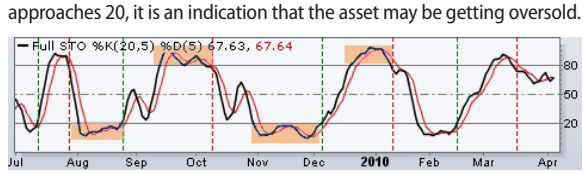
Multiplier or Smoothening Constant: (2 / (Time periods + 1)) = (2 / (10 + 1)) = 0.1818

EMA: {Close – EMA (previous day)} x multiplier + EMA (previous day).

	Date	Price	10-day SMA	Smoothing Constant 2/(10 + 1)	10-day EMA
1	24-Mar-10	22.27			
2	25-Mar-10	22.19			
3	26-Mar-10	22.08			
4	29-Mar-10	22.17			
5	30-Mar-10	22.18			
6	31-Mar-10	22.13			
7	1-Apr-10	22.23			
8	5-Apr-10	22.43			
9	6-Apr-10	22.24			
10	7-Apr-10	22.29	22.22		22.22
11	8-Apr-10	22.15	22.21	0.1818	22.21
12	9-Apr-10	22.39	22.23	0.1818	22.24
13	12-Apr-10	22.38	22.26	0.1818	22.27
14	13-Apr-10	22.61	22.31	0.1818	22.33
15	14-Apr-10	23.36	22.42	0.1818	22.52
16	15-Apr-10	24.05	22.61	0.1818	22.80
17	16-Apr-10	23.75	22.77	0.1818	22.97
18	19-Apr-10	23.83	22.91	0.1818	23.13
19	20-Apr-10	23.95	23.08	0.1818	23.28
20	21-Apr-10	23.63	23.21	0.1818	23.34
21	22-Apr-10	23.82	23.38	0.1818	23.43
22	23-Apr-10	23.87	23.53	0.1818	23.51
23	26-Apr-10	23.65	23.65	0.1818	23.54
24	27-Apr-10	23.19	23.71	0.1818	23.47
25	28-Apr-10	23.10	23.69	0.1818	23.40
26	29-Apr-10	23.33	23.61	0.1818	23.39
27	30-Apr-10	22.68	23.51	0.1818	23.26
28	3-May-10	23.10	23.43	0.1818	23.23
29	4-May-10	22.40	23.28	0.1818	23.08
30	5-May-10	22.17	23.13	0.1818	22.92

Stochastic Oscillator: -
The Stochastic Oscillator is a momentum indicator that shows the location of the close relative to the high-low range over a set number of periods. According to an interview with Lane, the Stochastic Oscillator "doesn't follow price, it doesn't follow volume or anything like that. It follows the speed or the momentum of price. As a rule, the momentum changes direction before price.

As we see from the below chart that the Stochastic Oscillator ranges from 0 to 100. An asset is deemed to be overbought once the Stochastic Oscillator approaches the 80 levels. Likewise, if the Stochastic Oscillator approaches 20, it is an indication that the asset may be getting oversold.



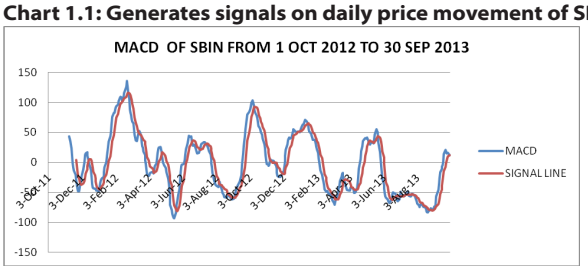
DATA ANALYSIS: -
MACD based on 12,26 days EMA
The chart 1.1-1.3 and Table 1.1-1.3 shows the analysis of MACD by tak-

ing 12 and 26 days EMA in the calculations. It helps MACD to generate Signals of buying and selling what we view in the chart and also helps to generate profit and return as given calculation in the table. I take 12 days constant and 26 days constant 0.1538 and 0.0741respectively.

Table 1.1 Generates Profit/Loss and Return from the signals on daily price movement of SBI for the year 1-10-2011 to 30-09-2013

Date	MACD	Signal Line	Closing Price	Buy	Avg. Buy	Sell	Profit	% Return
1-Dec-11	-31.92	-37.25	1762.45	1762.45	1762.45			
15-Dec-11	3.62	3.30	1785.15			1785.15	22.7	1.2880
2-Jan-12	-47.69	-44.04	1619.05	1619.05	1619.05			
24-Feb-12	118.47	115.69	2260.50			2260.5	641.45	39.6189
21-May-12	-84.59	-77.37	1940.55	1940.55	1940.55			
19-Jun-12	35.89	33.71	2087.95			2087.95	147.4	7.5958
3-Sep-12	-61.09	-58.68	1837.35	1837.35	1837.35			
11-Oct-12	87.56	92.17	2223.55			2223.55	386.2	21.0194
8-Mar-13	-61.20	-62.05	2166.15	2166.15	2166.15			
6-May-13	36.07	31.53	2213.80			2213.8	47.65	2.1998
TOTAL PROFIT/LOSS & RETURN							1245.4	71.7218
Average Return%								14.3444
Signals				5		5		

Chart 1.1: Generates signals on daily price movement of SBI for the year 1-10-2011 to 30-09-2013

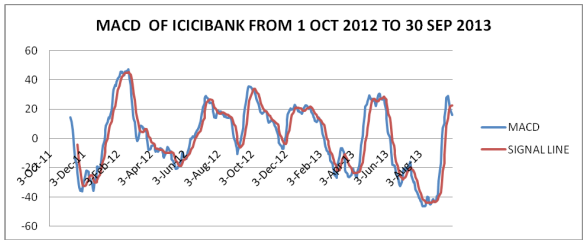


Form The Table 1.1 and chart 1.1 we can interpret that The "SBI" daily price movement analysis by MACD generates 5 buying signals and 5 selling signals from 1-10-2011 to 30-09-2013. The index has given profit in trading transactions is Rs.1245.4/- per share and providing Average Return of 14.34% per trading transaction.

Table 1.2 Generates Profit/Loss and Return from the signals on daily price movement of ICICIBANK for the year 1-10-2011 to 30-09-2013

Date	MACD	Signal Line	Closing Price	Buy	Avg. Buy	Sell	Profit	% Return
2-Dec-11	-32.76	-32.13	762.15	762.15				
23-Dec-11	-28.82	-29.99	728.15	728.15	745.15			
22-Feb-12	47.05	45.16	991.30			991.30	246.15	33.03
25-May-12	-17.13	-18.91	820.60	820.6	820.60			
17-Jul-12	25.40	26.33	920.10			920.10	99.50	12.13
11-Sep-12	-4.71	-5.80	934.30	934.3	934.30			
8-Oct-12	32.88	33.87	1066.70			1066.70	132.40	14.17
29-Nov-12	-7.01	-2.56	1034.10	1034.1	1034.10			
24-Dec-12	20.30	21.09	1123.90			1123.90	89.80	8.68
7-Mar-13	-20.52	-22.12	1108.35	1108.35				
2-Apr-13	-22.66	-21.98	1051.55	1051.55				
12-Apr-13	-22.26	-23.43	1040.20	1040.2	1066.70			
15-May-13	21.98	25.70	1147.45			1147.45	80.75	7.57
2-Jul-13	-27.07	-27.71	1067.90	1067.9				
14-Aug-13	-43.51	-43.94	892.55	892.55				
2-Sep-13	-42.25	-43.25	803.75	803.75	921.40			
26-Sep-13	20.88	21.26	935.20			935.20	13.80	1.50
TOTAL PROFIT/LOSS & RETURN							662.40	77.08
Average Return%								12.85
Signals				11		6		

Chart 1.2: Generates signals on daily price movement of ICICIBANK for the year 1-10-2011 to 30-09-2013

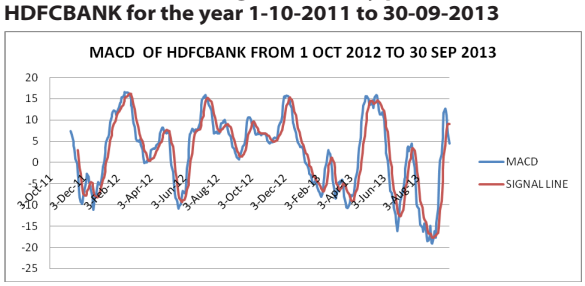


Form The Table 1.2 and chart 1.2 we can interpret that The "ICICI BANK" daily price movement analysis by MACD generates 11 buying signals and 6 selling signals from 1-10-2011 to 30-09-2013. The index has given profit in trading transactions is Rs.622/- per share and providing Average Return of 12.85% per trading transaction.

Table 1.3 Generates Profit/Loss and Return from the signals on daily price movement of HDFCBANK for the year 1-10-2011 to 30-09-2013

Date	MACD	Signal Line	Closing Price	Buy	Avg. Buy	Sell	Profit	% Return
2-Dec-11	-7.98	-7.42	453.50	453.50				
26-Dec-11	-7.39	-8.14	437.55	437.55	445.53			
24-Feb-12	16.08	16.15	533.15			533.15	87.63	19.67
28-May-12	-9.79	-8.98	500.00	500.00	500.00			
16-Jul-12	15.01	15.12	587.05			587.05	87.05	17.41
12-Feb-13	-6.29	-6.77	656.95	656.95	656.95			
26-Feb-13	1.02	0.77	656.45			656.45	-0.50	-0.08
11-Mar-13	-6.10	-5.63	657.30	657.30				
3-Apr-13	-8.19	-8.54	629.90	629.90	643.60			
6-May-13	14.85	12.91	680.95			680.95	37.35	5.80
1-Jul-13	-12.24	-12.47	669.50	669.50	669.50			
24-Jul-13	4.44	2.88	683.60			683.60	14.10	2.11
26-Aug-13	-16.73	-16.87	607.55	607.55				
4-Sep-13	-17.19	-17.35	562.55	562.55	585.05			
26-Sep-13	8.85	8.45	620.60			620.60	35.55	6.08
TOTAL PROFIT/LOSS & RETURN							261.18	50.99
Average Return%								8.50
Signals				9		6		

Chart 1.3: Generates signals on daily price movement of HDFCBANK for the year 1-10-2011 to 30-09-2013



Form The Table 1.3 and chart 1.3 we can interpret that The "HDFCBANK" daily price movement analysis by MACD generates 9 buying signals and 6 selling signals from 1-10-2011 to 30-09-2013. The index has given profit in trading transactions is Rs.261.18/- per share and providing Average Return of 8.50% per trading transaction.

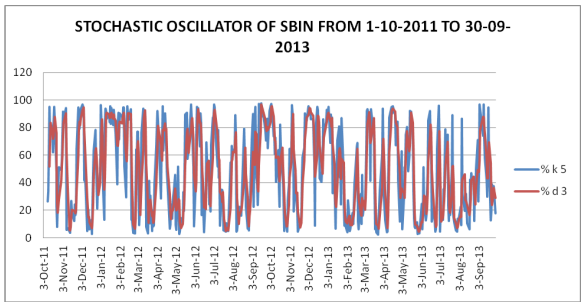
Stochastic Oscillator (%k5, %d3)

The chart 2.1-2.3 and Table 2.1-2.3 shows the analysis of Stochastic Oscillator is a momentum indicator that shows the location of the close relative to the high-low range over a set number of periods. It gives overbought and oversold signals to generate Signals of buying and selling what we view in the chart and also helps to generate profit and return as given calculation in the table.

Table 2.1 Generates Profit/Loss and Return from the signals of overbought and oversold of SBI for the year 1-10-2011 to 30-09-2013

Date	%K 5	%d 3	Closing Price	Buy	Avg. Buy	Sell	Profit	% Return
26-Oct-11	24.48	18.22	1866.65	1866.65	1866.65			
8-Nov-11	94.37	90.52	1997.30			1997.30	130.65	7.00
15-Nov-11	3.79	5.20	1729.65	1729.65	1729.65			
7-Dec-11	93.77	94.72	1945.40			1945.40	215.75	12.47
20-Dec-11	2.75	7.21	1578.50	1578.50	1578.50			
5-Jan-12	76.90	86.29	1692.45			1692.45	113.95	7.22
27-Feb-12	3.23	6.59	2122.85	2122.85	2122.85			
14-Mar-12	92.70	92.39	2354.80			2354.80	231.95	10.93
20-Mar-12	20.84	10.77	2187.35	2187.35	2187.35			
4-Apr-12	84.82	81.24	2162.55			2162.55	-24.80	-1.13
25-Apr-12	24.42	13.52	2171.75	2171.75				
11-May-12	14.30	7.24	1853.60	1853.60	2012.68			
29-May-12	87.03	85.43	2120.15			2120.15	107.48	5.34
23-Jul-12	4.69	4.99	2093.15	2093.15	2093.15			
18-Sep-12	97.61	97.03	2149.45			2149.45	56.30	2.69
30-Oct-12	4.32	8.16	2074.30	2074.30	2074.30			
8-Nov-12	82.65	89.78	2242.30			2242.30	168.00	8.10
20-Nov-12	9.85	7.60	2066.50	2066.50	2066.50			
6-Dec-12	93.76	93.73	2307.20			2307.20	240.70	11.65
4-Feb-13	4.00	10.28	2352.60	2352.60	2352.60			
11-Mar-13	88.32	91.20	2204.70			2204.70	-147.90	-6.29
26-Mar-13	12.71	6.43	2050.30	2050.30	2050.30			
17-Apr-13	90.57	92.98	2245.15			2245.15	194.85	9.50
27-May-13	11.51	8.71	2162.10	2162.10				
26-Jun-13	6.23	7.76	1900.05	1900.05				
5-Jul-13	13.97	11.94	1894.45	1894.45				
30-Jul-13	4.56	7.10	1723.30	1723.30	1919.98			
11-Sep-13	96.82	88.03	1690.05			1690.05	-229.93	-11.98
TOTAL PROFIT/LOSS & RETURN							1057.00	55.50
Average Return%								4.63
Signals				16	12			

Chart 2.1: Generates overbought and oversold signal of SBIN for the year 1-10-2011 to 30-09-2013

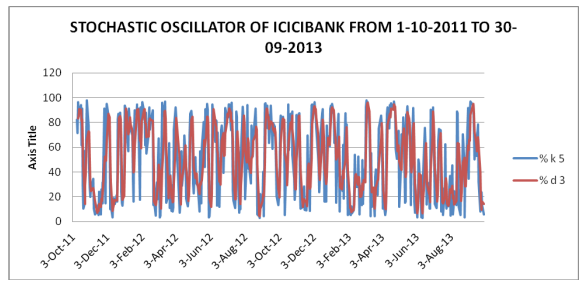


Form The Table 2.1 and chart 2.1 we can interpret that The "SBI" daily price movement analysis by Stochastic Oscillator generates 16 buying signals and 12 selling signals from 1-10-2011 to 30-09-2013. The index has given profit in trading transactions is Rs.1057/- per share and providing Average Return of 4.63% per trading transaction.

Table 2.2 Generates Profit/Loss and Return from the signals of overbought and oversold of ICICIBANK for the year 1-10-2011 to 30-09-2013

Date	%K 5	%d 3	Closing Price	Buy	Avg. Buy	Sell	Profit	% Return
24-Oct-11	15.80	14.11	868.45	868.45				
17-Nov-11	5.52	8.45	778.20	778.20				
23-Nov-11	18.80	16.90	726.70	726.70	791.12			
5-Dec-11	85.71	87.10	779.55			779.55	-11.57	-1.46
12-Dec-11	3.48	8.78	707.10	707.10	707.10			
27-Dec-11	78.51	82.33	726.10			726.10	19.00	2.69
27-Feb-12	4.91	13.16	887.45	887.45	887.45			
15-Mar-12	66.44	83.04	930.20			930.20	42.75	4.82
29-Mar-12	11.28	16.38	855.75	855.75	855.75			
3-Apr-12	85.21	83.88	908.20			908.20	52.45	6.13
11-Apr-12	20.21	13.70	864.70	864.70	864.70			
2-May-12	78.24	84.79	882.05			882.05	17.35	2.01
4-Jun-12	28.02	11.97	788.85	788.85	788.85			
8-Jun-12	88.09	90.68	829.15			829.15	40.30	5.11
17-Jul-12	25.81	18.10	922.90	922.90	922.90			
1-Aug-12	81.11	85.76	959.60			959.60	36.70	3.98
28-Aug-12	5.33	5.36	922.35	922.35	922.35			
10-Sep-12	83.25	91.32	934.30			934.30	11.95	1.30
13-Nov-12	14.16	11.94	1059.75	1059.75	1059.75			
3-Dec-12	88.49	92.28	1102.30			1102.30	42.55	4.02
12-Feb-13	25.04	13.66	1128.85	1128.85	1128.85			
8-Mar-13	96.36	95.87	1139.30			1139.30	10.45	0.93
20-Mar-13	4.19	10.63	1001.55	1001.55	1001.55			
15-Apr-13	75.00	84.63	1047.10			1047.10	45.55	4.55
5-Jun-13	18.59	10.78	1134.40		1134.40			
2-Jul-13	92.19	89.10	1079.10			1079.10	-55.30	-4.87
19-Jul-13	5.32	14.59	959.30	959.30				
30-Jul-13	12.73	13.80	926.05	926.05				
12-Aug-13	13.37	16.51	867.05	867.05	917.47			
11-Sep-13	93.94	95.01	969.75			969.75	52.28	5.70
TOTAL PROFIT/LOSS & RETURN							304.47	34.87
Average Return%								2.68
Signals				16		13		

Chart 2.1: Generates overbought and oversold signal of SBIN for the year 1-10-2011 to 30-09-2013

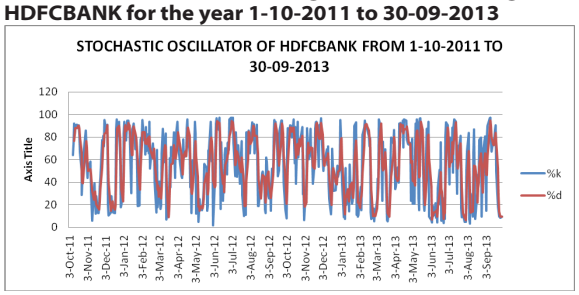


Form The Table 2.2 and chart 2.2 we can interpret that The "ICICIBANK" daily price movement analysis by Stochastic Oscillator generates 16 buying signals and 13 selling signals from 1-10-2011 to 30-09-2013. The index has given profit in trading transactions is Rs.304.47/- per share and providing Average Return of 2.68% per trading transaction.

Table 2.3 Generates Profit/Loss and Return from the signals of overbought and oversold of HDFCBANK for the year 1-10-2011 to 30-09-2013

Date	%K 5	%d 3	Closing Price	Buy	Avg. Buy	Sell	Profit	% Return
23-Nov-11	21.33	15.43	426.10	426.10	426.10			
7-Dec-11	90.89	90.55	467.10			467.10	41.00	9.62
12-Dec-11	12.89	14.54	432.05	432.05				
20-Dec-11	32.07	19.25	414.20	414.20	423.13			
23-Dec-11	80.65	87.91	437.55			437.55	14.43	3.41
19-Mar-12	10.74	9.09	498.85	498.85	498.85			
3-Apr-12	80.25	84.21	530.20			530.20	31.35	6.28
10-May-12	25.05	14.51	517.50	517.50	517.50			
7-Jun-12	96.88	85.89	537.80			537.80	20.30	3.92
24-Jul-12	18.69	18.98	574.05	574.05	574.05			
1-Aug-12	81.31	83.62	586.50			586.50	12.45	2.17
2-Nov-12	16.18	18.48	630.30	630.30	630.30			
22-Nov-12	93.53	91.54	669.10			669.10	38.80	6.16
9-Jan-13	7.41	11.77	667.50	667.50	667.50			
14-Feb-13	90.50	91.74	674.80			674.80	7.30	1.09
25-Feb-13	8.80	9.78	656.45	656.45	656.45			
11-Mar-13	87.11	92.12	655.25			655.25	-1.20	-0.18
25-Mar-13	16.50	9.38	609.40	609.40	609.40			
12-Apr-13	92.44	91.56	643.70			643.70	34.30	5.63
4-Jun-13	4.43	6.76	683.05	683.05	683.05			
1-Jul-13	90.28	88.12	668.75			668.75	-14.30	-2.09
31-Jul-13	4.82	6.31	609.75	609.75	609.75			
11-Sep-13	96.97	94.41	647.25			647.25	37.50	6.15
TOTAL PROFIT/LOSS & RETURN							221.93	42.16
Average Return%				12		11		3.83
Signals								

Chart 2.3: Generates overbought and oversold signal of HDFCBANK for the year 1-10-2011 to 30-09-2013



Form The Table 2.3 and chart 2.3 we can interpret that the "HDFCBANK" daily price movement analysis by Stochastic Oscillator generates 12 buying signals and 11 selling signals from 1-10-2011 to 30-09-2013. The index has given profit in trading transactions is Rs.42.16/- per share and providing Average Return of 3.83% per trading transaction.

FINDINGS

Table 3.1: Comparison of MACD and Stochastic Oscillator with No. of signals, Total Profit, Total Return and Average Return from 1-10-2011 to 30-09-2013

	MACD			
Company	No. of Signal (Buying, Selling)	Total Profit	Total Return	Avg. Return
SBI	(5,5)	1245.4	71.72	14.34
ICICI	(11,6)	662.4	77.08	12.85
HDFC	(9,6)	261.18	55.99	8.5
	(25,17)	2168.98	204.79	35.69
	Stochastic Oscillator			
Company	No. of Signal (Buying, Selling)	Total Profit	Total Return	Avg. Return
SBI	(16,12)	1057	55.5	4.63
ICICI	(16,13)	304.47	34.87	2.68
HDFC	(12,11)	221.93	42.16	3.83
	(44,36)	1583.4	132.53	11.14

- From the table 3.1 we can find that stochastic oscillator generate more number of signals than MACD.
- The total profit of three companies by MACD is Rs. 2168.98 which is higher than Stochastic Oscillator of Rs. 1583.4 in two years.
- Total return of three companies by MACD is 204.79% which is higher than Stochastic Oscillator 132.53%.
- Average return of three companies by MACD is 35.69% which is higher than Stochastic Oscillator of 11.14%.
- SBI gives good profit and return in both MACD and Stochastic Oscillator in last two years.
- HDFCBANK generate low profit and return by MACD in last two years.
- ICICI generate better profit of Rs. 304 by Stochastic Oscillator but as no. signal is more, the average return was generated low.

RECOMMENDATION

By analysis, we can find that MACD give accurate signal, better profit and higher return compare to Stochastic Oscillator. So we can use MACD

Stochastic Oscillator gives more signals but the accuracy of that signal not so good compare to MACD.

CONCLUSION

In this study, I take two methods for finding Buying and Selling signal and for finding return. Out of two methods MACD comparatively give good return and profit than stochastic oscillator.

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